

The African Organisation for Standardisation

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ARS 930 (2012) (English): Fresh collard greens or broccoli greens -- Specification



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Fresh collard greens or broccoli greens — Specification



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Foreword

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This African Standard was prepared by the ARSO Technical Harmonization Committee on Agriculture and Food Products (ARSO/THC 1).

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Introduction

Collard greens are various loose-leafed cultivars of *Brassica oleracea* (Acephala Group), the same species as cabbage and broccoli. The plant is grown for its large, dark-coloured, edible leaves in many parts of Africa, Europe, USA, Brazil and Asia. They are classified in the same cultivar group as kale and spring greens, to which they are genetically similar. The name "collard" is a corrupted form of the word "colewort" (cabbage plant). In Congo, Tanzania and Kenya (East Africa), the plant is called *sukuma wiki* with no distinction from kales.

The cultivar group name *Acephala* ("without a head" in Greek) refers to the fact that this variety of *B. oleracea* does not have the usual close-knit core of leaves (a "head") like cabbage. The plant has an upright stalk, often growing up to two feet tall. The plant is very similar to kale.

The plant is commercially cultivated for its thick, slightly bitter, edible leaves. They are available year-round, but are tastier and more nutritious in the cold months. For best texture, the leaves should be picked before they reach their maximum size, at which stage the leaves will be thicker and should be cooked differently from the new leaves. Age will not affect flavour. Flavour and texture also depend on the cultivar.

Fresh collard leaves can be stored for up to 10 days if refrigerated to just above freezing (1°C) at high humidity (>95%). In domestic refrigerators, fresh collard leaves can be stored for about three days. Once cooked, they can be frozen and stored for greater lengths of time.

Widely considered to be a healthy food, collards are good sources of vitamin C and soluble fibre, and contain multiple nutrients with potent anticancer properties, such as diindolylmethane and sulforaphane.

Researchers at the University of California at Berkeley have recently discovered that 3,3'-diindolylmethane in *Brassica* vegetables such as collard greens is a potent modulator of the innate immune response system with potent antiviral, antibacterial and anticancer activity.

Fresh collard greens or broccoli greens — Specification

1 Scope

This African Standard applies to collard greens or broccoli greens, or mixtures of the two which may consist of leaves, or parts of leaves, plants or mixtures of leaves and plants, grown from *Brassica oleracea* subsp. (var.) *botrytis*; subgroup *cymosa (italica)* (broccoli) and *Brassica oleracea* subsp. (var.) *acephala*; subgroup *laciniata*, intended for human consumption.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ARS 53, *General principles of food hygiene — Code of practice*

ARS 56, *Prepackaged foods — Labelling*

CAC/GL 21, *Principles for the establishment and application of microbiological criteria for foods*

CAC/RCP 44, *Recommended international code of practice for the packaging and transport of tropical fresh fruits and vegetables*

CAC/RCP 53, *Code of hygienic practice for fresh fruits and vegetables*

CODEX STAN 193, *Codex general standard for contaminants and toxins in food and feed*

ISO 874, *Fresh fruits and vegetables — Sampling*

ISO 2169, *Fruits and vegetables — Physical conditions in cold stores — Definitions and measurement*

ISO 6561-1, *Fruits, vegetables and derived products — Determination of cadmium content — Part 1: Method using graphite furnace atomic absorption spectrometry*

ISO 6561-2, *Fruits, vegetables and derived products — Determination of cadmium content — Part 2: Method using flame atomic absorption spectrometry*

ISO 6633, *Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric method*

ISO 6634, *Fruits, vegetables and derived products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric method*

ISO 6637, *Fruits, vegetables and derived products — Determination of mercury content — Flameless atomic absorption method*

ISO 7563, *Fresh fruits and vegetables — Vocabulary*

ISO 7952, *Fruits, vegetables and derived products — Determination of copper content — Method using flame atomic absorption spectrometry*

ISO 9526, *Fruits, vegetables and derived products — Determination of iron content by flame atomic absorption spectrometry*

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ISO 17239, *Fruits, vegetables and derived products — Determination of arsenic content — Method using hydride generation atomic absorption spectrometry*

3 Definitions

For the purposes of this standard, the terms and definitions in ISO 7563, and the following terms and definitions apply.

3.1

similar varietal characteristics

the collard greens or broccoli greens shall be of the same general colour and character of growth. No mixture of varieties or types shall be permitted which materially affects the appearance of the lot.

3.2

fresh

the greens are not more than slightly wilted

3.3

fairly tender

the greens are not tough, or excessively fibrous

3.4

fairly clean

the appearance of the greens is not materially affected by the presence of dirt, dust, or other foreign material

3.5

well-trimmed

the main stem shall not extend more than one inch below the point of attachment of the first leaf

3.6

damage

any defect which materially affects the appearance, or the edible or shipping quality of the individual unit, or the lot as a whole. Any one of the following defects, or any combination of defects, the seriousness of which exceeds the maximum allowed for any one defect, shall be considered as damage:

- (a) Coarse stalks or seedstems when they are woody and tough and more than 9 cm in length, or when they are fairly tender or tender and are more than one-third the length of the entire plant. The length of the plant shall be measured from the base of the main stem to the tip of the leaf extending the greatest distance from the base of the main stem;
- (b) Discoloration when the appearance of the unit is materially affected by yellowing or any other type of discoloration; and,
- (c) Mechanical damage when the unit is badly crushed, torn, or broken.

3.7

serious damage

any defect which seriously affects the appearance, or the edible or shipping quality of the individual unit, or the lot as a whole. Any one of the following defects, or any combination of defects, the seriousness of which exceeds the maximum allowed for any one defect, shall be considered as serious damage:

- (a) Insects when the unit is noticeably infested, or when it is seriously damaged by them;
- (b) Discoloration when the unit is badly discoloured; and,
- (c) Decay.

4 Provisions concerning quality

4.1 General

The purpose of the standard is to define the quality requirements of broccoli greens or collard greens at the export control stage, after preparation and packaging.

4.2 Minimum requirements

4.2.1 In all classes, subject to the special provisions for each class and the tolerances allowed, the broccoli or collard greens must be:

- (a) intact
- (b) sound; produce affected by rotting or deterioration such as to make it unfit for consumption is excluded
- (c) clean and trimmed, i.e. practically free from all earth or other growing medium and practically free of any visible foreign matter
- (d) fresh in appearance
- (e) practically free from pests
- (f) practically free from damage caused by pests
- (g) turgid
- (h) not running to seed
- (i) free of abnormal external moisture
- (j) free of any foreign smell and/or taste.

4.2.2 The produce must be of normal development. The development and condition of the produce must be such as to enable it:

- (a) to withstand transportation and handling
- (b) to arrive in a satisfactory condition at the place of destination.

4.3 Classification

The produce is classified as defined below:

4.3.1 Class I

Class I consists of collard greens or broccoli greens, of similar varietal characteristics which are fresh, fairly tender, fairly clean, well-trimmed, and of characteristic colour for the variety or type; which are free from decay and free from damage caused by coarse stalks and seedstems, discoloration, freezing, foreign material, disease, insects or mechanical or other means.

4.3.2 Class II

This class includes collard greens or broccoli greens that do not qualify for inclusion in Class I but satisfy the minimum requirements specified above.

The following defects may be allowed, provided the collard greens or broccoli greens retain their essential characteristics as regards the quality, the keeping quality and presentation:

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- (a) damaged leaves, such as cracks, bruises, holes or tears
- (b) defects in colouring
- (c) slight lack of freshness

5 Provisions concerning sizing

Sizing is not used in this produce.

6 Provisions concerning tolerances

6.1 Quality tolerances

In order to allow for variations incident to proper grading and handling, not more than a total of 10 per cent, by weight, of the units in any lot, may fail to meet the requirements of the grade provided that not more than one-half of this amount, or 5 per cent, shall be allowed for serious damage by any cause, and including therein not more than 2 per cent for decay.

6.2 Application of tolerances

The contents of individual containers in the lot, based on sample inspection, are subject to the following limitations provided that the averages for the entire lot are within the tolerances specified:

- (a) When a tolerance is 10 per cent or more, individual containers in any lot shall have not more than one and one-half times the tolerance specified.
- (b) When a tolerance is less than 10 percent, individual containers in any lot shall have not more than double the tolerance specified provided that at least one specimen which does not meet the requirements may be permitted in any container.

6.3 Basis for calculating percentages

Percentages shall be calculated on the basis of weight or an equivalent basis. In sorting or grading the sample, the unit shall be the plant, the leaf, or a portion of the leaf or plant exactly as it occurs in the sample. A plant or portion of plant shall not be broken to remove the defective portion, but shall be considered as a unit.

7 Provisions concerning presentation

7.1 Uniformity

The contents of each package must be uniform and contain only beet greens of the same origin, quality, colour and size (if sized).

The visible part of the contents of the package must be representative of the entire contents.

7.2 Packaging

Collard greens or broccoli greens must be packed in such a way as to protect the produce properly. The materials used inside the package must be new¹, clean, and of a quality such as to avoid causing any external or internal damage to the produce. The use of materials, particularly of paper or stamps bearing trade specifications is allowed, provided the printing or labelling has been done with non-toxic ink or glue.

Collard greens or broccoli greens shall be packed in each container in compliance with CAC/RCP 44.

¹ For the purposes of this Standard, this includes recycled material of food-grade quality.

7.2.1 Description of containers

The containers shall meet the quality, hygiene, ventilation and resistance characteristics to ensure suitable handling, shipping and preserving of the collard greens or broccoli greens. Packages must be free of all foreign matter and smell.

7.3 Presentation

The collard greens or broccoli greens may be presented as bunches.

8 Marking and labelling

8.1 Consumer packages

In addition to the requirements of ARS 56, the following specific provisions apply:

8.1.1 Nature of produce

If the produce is not visible from the outside, each package shall be labelled as to the name of the produce and may be labelled as to name of the variety and/or commercial type.

8.2 Non-retail containers

Each package² must bear the following particulars, in letters grouped on the same side, legibly and indelibly marked, and visible from the outside:

8.2.1 Identification

The exporter, packer and/or dispatcher shall be identified by name and physical address (e.g. street/city/region/postal code and, if different from the country of origin, the country) or a code mark officially recognized by the national authority.³

8.2.2 Nature of produce

— “Collard greens” or “Broccoli greens”

8.2.3 Origin of produce

Country of origin and, optionally, district where grown, or national, regional or local place name.

8.2.4 Commercial specifications

— Class

— Nature expressed by “Bunched collard greens” or “Bunched broccoli greens”

— Number of bunches.

8.2.5 Official control mark (optional)

² Package units of produce prepacked for direct sale to the consumer shall not be subject to these marking provisions but shall conform to the national requirements. However, the markings referred to shall in any event be shown on the transport packaging containing such package units.

³ The national legislation of a number of countries requires the explicit declaration of the name and address. However, in the case where a code mark is used, the reference “packer and/or dispatcher (or equivalent abbreviations)” has to be indicated in close connection with the code mark, and the code mark should be preceded by the ISO 3166 (alpha) country/area code of the recognizing country, if not the country of origin.

9 Contaminants

9.1 Pesticide residues

Fresh broccoli or collard greens shall comply with those maximum pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

9.2 Other contaminants

Fresh broccoli or collard greens shall comply with those maximum levels for contaminants established by the Codex Alimentarius Commission for this commodity.

10 Hygiene

10.1 It is recommended that the produce covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of ARS 53, CAC/RCP 53, and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

10.2 The produce should comply with any microbiological criteria established in accordance with CAC/GL 21.



A bundle of collard greens



Quality collard greens

Fresh collard greens



Broccoli greens



Growing broccoli greens

Growing collard greens



Collards seeding



Collards in farm

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(Reprinted — January 1997)

Draft African Standard for comments only — Not to be cited as African Standard

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